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to Dr. Regnard, that there is a total absence of putrefaction in the greater depths of the sea. The curious "abyssal" fishes discovered in the "Challenger," and other expeditions appear to rise after death, so that they are sometimes found on the surface; though, as a rule, they go to pieces, as the surrounding pressure diminishes, long before they reach the air. Still, there is no proof that bathybial or abyssal micro-organisms do not exist; and, if so, they could cause decomposition in the corpses of men as well as in the dead bodies of abyssal fishes. The question is of considerable medico-legal, and yet rather biological, interest, and it is far from settled.

NOTES AND NEWS.

ACCORDING to *Nature*, for the purpose of growing plants under more natural conditions than those usually afforded by the soil and surroundings of ordinary botanic gardens, M. G. Bonnier, the director of the Botanic Garden in Paris, has obtained from the director for higher education in Paris the grant of a piece of land in the forest of Fontainebleau as an annex for experimental culture. It has been placed under the special charge of M. Cl. Duval.

—A pamphlet published by the Cornell University Christian Association, containing a map of the campus, and giving detailed information about the village of Ithaca, the university buildings, examinations, boarding-houses, etc., will be sent free to prospective students. Apply to the treasurer of the Cornell University, Ithaca, N.Y.

—One of the problems presented by the frightful eruption of Mount Bandai in Japan, two years ago, was the manner in which a large number of holes in the earth in the neighborhood of the mountain were formed. It was suggested, says *Nature*, that they owed their existence to the falling of rocks and stones cast up by the eruption, while another theory was that they were formed by forces beneath the surface. At the last meeting of the Seismological Society of Japan, Dr. Knott read a paper on the first theory, in which he demonstrated that it was quite insufficient to account for the phenomena. Professor Milne, it may be added, has expressed the same view from the beginning.

—Mr. A. R. Bonsdorf has contributed to the *Izvestia* of the Russian Geographical Society (vol. xxv. 5) an elaborate paper on the conclusions as to the secular upheaval of the coasts of Finland which may be drawn from the accurate measurements made since 1858 under the direction of the Finska Vetenskaps-Societeten. It appears from the mathematical analysis to which the measurements have been submitted, as we learn from *Nature*, that the average upheaval of the coasts of South-West Finland is 55 centimetres per century; and that the rate of upheaval increases from Ut-ö (in the Aland Islands) towards the north, and towards the east as far as Porkala (not far from Helsingfors), whence it decreases again towards the east. The interpolation formulae better correspond to actual measurements if the changes of the level of the Baltic Sea resulting from the changes of atmospheric pressure are taken into account.

—An expedition has been despatched by the Peruvian Government to the Javary River, on the borders of Peru and Bolivia. The primary object of the expedition, as we learn from the "Proceedings of the Royal Geographical Society," is a military one, being the chastisement of the Indians for the murder of white traders; but, as not less than five scientific men accompany the party, some important results with regard to the topography and ethnography of the region may be expected. Among the savants is M. Richard Payer, who, on returning to South America after a hurried visit to Europe, was invited to join the expedition.

—An industrial exhibition will be held at the Swedish capital during 1892, a remarkably well-positioned site in the proximity of the town having been fixed upon. A committee has been considering the financial question of the matter, and arrived at the result that the expenses would be likely to exceed the profits by 1,200,000 krona. This deficiency is proposed to be covered by a grant from the state of 400,000 krona (half

to be taken from the industrial manufacture fund), by a grant of 300,000 krona from the city of Stockholm, and the balance of 500,000 krona it is proposed to raise through a lottery. Stockholm is a beautiful town, and the Swedish manufacturers are sure to exert themselves: so the exhibition should become one of some interest, even in these days of excessive exhibitions.

—The annual report of the trustees of the Lenox Library shows that there has been no change in the condition of the library since their last report to the Legislature. A re-arrangement of the various collections of which it is composed, begun during the year and still in progress, was determined on by the trustees with a view to its easier administration in the service of the public, who are freely admitted to its inspection and use. The total number of visitors in 1889 was 8,708. An addition of special interest has been made to the picture-gallery in the gift, by Mr. Alexander Maitland, of the portrait of Van Brugh Livingston, by Sir Henry Raeburn. The chief additions to the other collections have been made by the purchase of the library of the late president, Robert Lenox Kennedy. The Drexel Musical Library, the legacy of the late Mr. Joseph W. Drexel, has been completely arranged in special cases. The completion and publication of the catalogue, which is now in progress, will make available to the musical world what is perhaps the most important collection of the kind in this country.

—An interesting paper by Major Rogala von Bieberstein, German Army, has appeared in the February number of *Colburn's United Service Magazine*. The principal deductions derived from the last summer (1889) manœuvres in the presence of the Emperor, when "extensive use was made of smokeless powder by different divisions of the Guards, as well as by the whole of the Tenth Army Corps," may be summarized as follows. Cast-steel guns were seriously injured; bronze guns were unaffected; steel-bronze guns are recommended. It was found necessary to lubricate gun-barrels from time to time by means of an oily cloth. The cartridges take up less space in the powder-chamber. Whether with guns or rifles, "a better aim is obtained, as also quicker firing; it is easier to judge distances; a better view of one's own troops is obtained; a clearer general view is presented; and a better control in directing an attack or defence is practicable. . . . Troops can suffer great losses from an enemy's fire without knowing whence it comes, and whither they shall direct their fire in defence. . . . The artillery. . . will in future fill their shells with explosives which produce dense smoke, in order the better to observe the" bursts. "Cavalry will suffer more than any other branch of the service by the introduction of smokeless powder, for their best friend was always the smoke which veiled their attack. . . . Their tactical worth in field operations will become much less" than formerly. As to the defence, defenders "can use their weapons with more composure, especially in the front line, than can the attacking party. . . . The spade will play a more important part than formerly, as well for the infantry as for the artillery." As regards the attack, the cavalry will reconnoitre a position under great difficulties, they "must be prepared to suffer . . . greater losses than heretofore," and "must develop a more careful reconnoitring activity. . . . The attacking party of to-day must make great use of his artillery to shake the enemy's infantry" before the position is assaulted. Major Bieberstein considers that the "attacking force which leaves its cover to advance will be cut down by a murderous fire, better aimed than formerly. . . . The increased deadly effect of the repeating rifle and smokeless powder on an enemy repulsed after an unsuccessful storm, will tend to annihilation, and probably change an orderly retreat into hopeless flight." Applying these deductions, it appears more than ever necessary that generals in the field should be experts of the highest order. Also it appears that the preponderance of advantages gained by modern inventions lie with the defence, and that troops which may not possess sufficient experience to attack, may nevertheless defend a good position against the best soldiers in the world, and especially in an enclosed country.